

CLAIMS

1. A dielectric resin composition comprising at least one type of epoxy resin and at least one type of cyanate ester which is reactive with said epoxy resin, together with a metal ion catalyst system, the ratio of the epoxy functional groups of said epoxy resin to the cyanate groups of said cyanate ester being in the range of from 1:0.8 to 1:1.4.

2. A dielectric resin composition according to claim 1, wherein said epoxy resin comprises an aromatic epoxy resin, an alicyclic epoxy resin or a mixture thereof, all with two or more epoxy groups in the molecule.

3. A dielectric resin composition according to claim 2, wherein said aromatic epoxy resin contains two or more benzene rings.

4. A dielectric resin composition according to claim 1, wherein said cyanate ester has two or more cyanate groups in the molecule.

5. A dielectric resin composition according to claim 1, wherein the ratio of the epoxy functional groups of said epoxy resin to the cyanate groups of said cyanate ester is in the range of from 1:0.8 to 1:1.

6. A dielectric resin composition according to claim 1, wherein said metal ion catalyst system is an acetylacetonate of Cu(II), Co(II), Zn(II) or Mn(II), or a mixture thereof, and is used in an amount such that the active metal ion content is 100-500 parts per 1 million parts of the solid content of said composition.

7. A dielectric resin composition according to claim 1, which can be heat cured in 1 to 2 hours at 150 to 200°C.

8. A dielectric resin composition according to claim 1, which further comprises colloidal silica as a thixotropic agent.

9. A dielectric resin composition comprising a polyimide resin with side chain epoxy groups, a cyanate

ester with two or more cyanate groups in the molecule,
and a metal ion catalyst system.

10. A dielectric resin composition according to
claim 9, which is used as interlayer dielectric in
5 multilayer circuit boards or which is used to bond a core
substrate of a multilayer circuit board and a separately
formed multilayer wiring structure.

11. A dielectric resin composition according to
claim 9, wherein the number average molecular weight of
10 said polyimide resin is between 5000 and 1 million.

12. A dielectric resin composition according to
claim 9, wherein said metal ion catalyst system is an
acetylacetonate of Cu(II), Co(II), Zn(II) or Mn(II), or a
mixture thereof, and is used in an amount such that the
15 active metal ion content is 100-500 parts per 1 million
parts of the solid content of said composition.

13. A dielectric resin composition according to
claim 9, wherein said polyimide resin is obtained by
epoxidation of a polyimide with side chain hydroxyl
20 groups that can be prepared by ring closure reaction of a
polyamic acid precursor that is obtained by
polymerization of a diamine and a tetracarboxylic
dianhydride, at least one of which has a hydroxyl group
in the molecule.

14. A dielectric resin composition according to
claim 9, which can be heat cured in 1 to 2 hours at 180
25 to 250°C.

15. A dielectric resin composition according to
claim 9, which further comprises colloidal silica as a
30 thixotropic agent.

16. A dielectric resin composition according to
claim 9, wherein the ratio of the epoxy functional groups
of the polyimide resin to the cyanate groups of the
cyanate ester is in the range of from 1:0.8 to 1:1.4.

17. A dielectric resin composition according to
claim 9, wherein the ratio of the epoxy functional groups
35 of the polyimide resin to the cyanate groups of the

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cyanate ester is in the range of from 1:08 to 1:1.

18. A multilayer circuit board having a multilayer structure comprising a core substrate and a required number of dielectric layers and wiring layers stacked alternately, wherein at least one of the dielectric layers is formed from a dielectric resin composition according to claim 1.

19. A multilayer circuit board having a multilayer structure comprising a core substrate and a required number of dielectric layers and wiring layers stacked alternately, wherein at least one of the dielectric layers is formed from a dielectric resin composition according to claim 9.

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